AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Original) A method of treating a cancer in a mammal, comprising administering to a mammal afflicted with cancer an IL-21 polypeptide, variant, or fragment of either of the foregoing in an amount effective to treat the cancer in the mammal.

2. (Original) A method of treating a cancer in a mammal, comprising administering to a mammal afflicted with cancer an IL-21 polynucleotide or fragment thereof in an amount effective to treat the cancer in the mammal.

3. (Original) A method of treating a cancer in a mammal, comprising administering to a mammal afflicted with cancer an expression vector containing an IL-21 polynucleotide or a fragment thereof in an amount effective to treat the cancer in the mammal.

4. (Original) The method according to claim 3, wherein the expression vector is pORF.

5. (Previously Presented) The method according to claim 1, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

6. (Cancelled).

7. (Cancelled).

8. (Original) The method according to claim 1, wherein the IL-21 polypeptide, variant, or fragment of either of the foregoing is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

9. (Original) The method according to claim 2, wherein the IL-21 polynucleotide or fragment thereof is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

10. (Original) The method according to claim 3, wherein the expression vector is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

11. (Previously Presented) The method according to claim 8, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

12. (Previously Presented) The method according to claim 8, wherein the cytokine is IL-2, IL-7, or IL-15.

13. (Previously Presented) The method according to claim 8, wherein the antigen-specific T lymphocyte is a tumor specific T lymphocyte.

14. (Original) A method of treating an immune-related disease in a mammal, comprising administering to a mammal afflicted with an immune-related disease an IL-21 polypeptide, variant, or fragment of either of the foregoing, in an amount effective to treat the immune-related disease in the mammal.

15. (Original) A method of treating an immune-related disease in a mammal, comprising administering to a mammal afflicted with an immune-related disease an IL-21 polynucleotide or fragment thereof in an amount effective to treat the immune-related disease in the mammal.

16. (Original) A method of treating an immune-related disease in a mammal, comprising administering to a mammal afflicted with an immune-related disease an expression vector containing an IL-21 polynucleotide or fragment thereof in an amount effective to treat the immune-related disease in the mammal.

17. (Original) The method according to claim 16, wherein the expression vector is pORF.

18. (Original) A method of preventing a cancer in a mammal, comprising administering to a mammal an IL-21 polypeptide, variant, or fragment of either of the foregoing in an amount effective to prevent the cancer in the mammal.

19. (Original) A method of preventing a cancer in a mammal, comprising administering to a mammal an IL-21 polynucleotide or fragment thereof in an amount effective to prevent the cancer in the mammal.

20. (Original) A method of preventing a cancer in a mammal, comprising administering to a mammal an expression vector containing an IL-21 polynucleotide or a fragment thereof in an amount effective to prevent the cancer in the mammal.

21. (Original) The method according to claim 20, wherein the expression vector is pORF.

22. (Previously Presented) The method according to claim 18, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

23. (Cancelled).

24. (Cancelled).

25. (Original) The method according to claim 18, wherein the IL-21 polypeptide, variant, or fragment of either of the foregoing is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

26. (Original) The method according to claim 19, wherein the IL-21 polynucleotide or fragment thereof is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

27. (Original) The method according to claim 20, wherein the expression vector is co-administered with a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

28. (Previously Presented) The method according to claim 25, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

29. (Previously Presented) The method according to claim 25, wherein the cytokine is IL-2, IL-7, or IL-15.

30. (Previously Presented) The method according to claim 25, wherein the antigen specific T lymphocyte is a tumor-specific T lymphocyte.

31. (Original) A pharmaceutical composition comprising an IL-21 polypeptide, variant thereof, or fragment of either of the foregoing, and a pharmaceutically acceptable carrier, diluent, or excipient.

32. (Original) A pharmaceutical composition comprising an IL-21 nucleic acid molecule, or fragment thereof, and a pharmaceutically acceptable carrier, diluent, or excipient.

33. (Original) The pharmaceutical composition according to claim 31, wherein the IL-21 nucleic acid molecule is constructed into an expression vector.

34. (Original) The pharmaceutical composition according to claim 32, wherein the expression vector is pORF.

35. (Previously Presented) The pharmaceutical composition according to claim 31 further comprising a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

36. (Original) The pharmaceutical composition according to claim 33, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

37. (Original) The pharmaceutical composition according to claim 33, wherein the cytokine is IL-2, IL-7, or IL-15.

38. (Original) The pharmaceutical composition according to claim 33, wherein the antigen-specific T lymphocyte is a tumor-specific T lymphocyte.

39. (Previously Presented) The method according to claim 2, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

40. (Previously Presented) The method according to claim 3, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

41. (Previously Presented) The method according to claim 4, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

42. (Previously Presented) The method according to claim 9, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

43. (Previously Presented) The method according to claim 10, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

44. (Previously Presented) The method according to claim 9, wherein the cytokine is IL-2, IL-7, or IL-15.

45. (Previously Presented) The method according to claim 10, wherein the cytokine is IL-2, IL-7, or IL-15.

46. (Previously Presented) The method according to claim 9, wherein the antigen-specific T lymphocyte is a tumor specific T lymphocyte.

47. (Previously Presented) The method according to claim 10, wherein the antigen-specific T lymphocyte is a tumor specific T lymphocyte.

48. (Previously Presented) The method according to claim 19, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

49. (Previously Presented) The method according to claim 20, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

50. (Previously Presented) The method according to claim 21, wherein the cancer is a melanoma, a sarcoma, or a colon cancer.

51. (Previously Presented) The method according to claim 26, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

52. (Previously Presented) The method according to claim 27, wherein the vaccine is a recombinant viral vaccine or a peptide vaccine.

53. (Previously Presented) The method according to claim 26, wherein the cytokine is IL-2, IL-7, or IL-15.

54. (Previously Presented) The method according to claim 27, wherein the cytokine is IL-2, IL-7, or IL-15.

55. (Previously Presented) The method according to claim 26, wherein the antigen specific T lymphocyte is a tumor-specific T lymphocyte.

56. (Previously Presented) The method according to claim 27, wherein the antigen specific T lymphocyte is a tumor-specific T lymphocyte.

57. (Previously Presented) The pharmaceutical composition according to claim 32 further comprising a vaccine, an antigen-specific T lymphocyte, a cytokine, or a combination thereof.

58. (New) A method for inducing apoptosis of a natural killer (NK) cell comprising contacting the NK cell with an amount of an IL-21 polypeptide, variant, or fragment of either of the foregoing, effective to induce apoptosis of the natural killer cell.

59. (New) A method for inducing apoptosis of a NK cell comprising contacting the NK cell with an amount of an IL-21 polynucleotide, or fragment thereof, effective to induce apoptosis of the NK cell.

60. (New) A method of activating NK cell cytolytic activity, comprising contacting the NK cell with an amount of an IL-21 polypeptide, variant, or fragment of either of the foregoing, effective to activate NK cell cytolytic activity.

61. (New) The method of claim 60, wherein the natural killer cell is *in vitro*.

62. (New) The method of claim 60, wherein the natural killer cell is *in vivo*.

63. (New) A method of activating NK cell cytolytic activity, comprising contacting the NK cell with an amount of an IL-21 polynucleotide, or fragment thereof, effective to activate NK cell cytolytic activity.

64. (New) The method of claim 63, wherein the natural killer cell is *in vitro*.

65. (New) The method of claim 63, wherein the natural killer cell is *in vivo*.